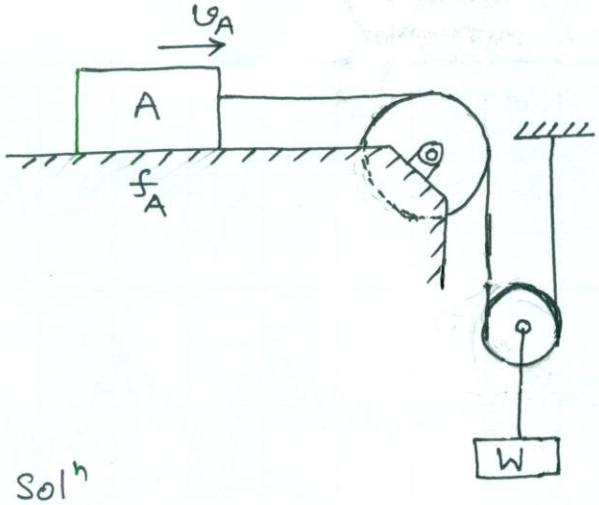
# 1137/P.327




$W_A = 966$ lb
$f_A = 1/3$
$v_{A1} = 60$ fps, $v_{A2} = 10$ fps } in 25 s.

(a) $W$ = ?
(b) $S_W$ = ?
(c) cable tension = ?

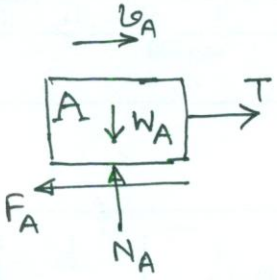
Sol$^n$

Considering motion of body A

$v_{A2} = v_{A1} + a_A t \Rightarrow 10 = 60 + a_A \times 25 \quad \therefore a_A = -2 \text{ fps}^2$

-ve sign means retardat$^n$

$\therefore a_W = \frac{a_A}{2} = -1 \text{ fps}^2$ (direct$^n$ ↓, -ve implies retardat$^n$)




For body A taking $\Sigma F_V = 0$

$N_A = W_A = 966$ lb

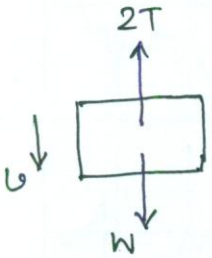
$\therefore F_A = N_A \cdot f_A = 966 \times \frac{1}{3} = 322$ lb.

Again, taking $\Sigma F_H = ma$, → +ve for body A

$T - F_A = \frac{W_A}{g} \cdot a_A$

$\Rightarrow T - 322 = \frac{966}{32.2} \times (-2)$

$\therefore T = \boxed{262 \text{ lb}}$




For body B, Taking $\Sigma F_V = ma$ ↓ +ve

$W - 2T = \frac{W}{g} \cdot a_W$

$\Rightarrow W - 2 \times 262 = \frac{W}{32.2} \times (-1)$

$\therefore W = \boxed{508.22 \text{ lb}}$

$S_A = v_{A1} t + \frac{1}{2} a_A t^2 = 60 \times 25 + \frac{1}{2} \times (-2) \times 25^2 = 875$ ft.

$\therefore S_W = \frac{875}{2} = \boxed{437.5 \text{ ft.}}$